

# TECHNICAL DATA – ENGINE KTM 640 LC4 e '99

Type	640 LC4-E	
Design	Liquid-cooled single cylinder 4-stroke engine with balancer shaft and electric starter	
Displacement	625 ccm	
Bore / Stroke	101 / 78 mm	
Ratio	11,0 : 1	
Fuel	unleaded premium gasoline with a least RON 95	
Valve timing	4 valves over rocker arm and 1 overhead camshaft, camshaft drive through single chain	
Camshaft	249° (249/1)	
Valve timing by 1 mm valve clearance	IO 13° BTDC	EO 53° BBDC
Valve diameter	IC 53° ABDC	EC 11° ATDC
Valve clearance cold	Intake: 36 mm	Exhaust: 30 mm
Crank shaft bearing	Intake: 0.15 mm    Exhaust: 0.15 mm	
Connecting rod bearing	2 cylinder roller bearing	
Top end bearing	needle bearing	
Piston	bronze bushing	
Piston rings	cast aluminium alloy	
Engine lubrication	1 compression ring, 1 taper face ring, 1 oil scraper ring	
Quantity of engine oil	2 Eaton-Oilpumps	
Engine oil	see below #	
Primary ratio	2.1 liters including frame	
Clutch	straight geared spur wheels 30 : 81 teeth	
Transmission	multi disc clutch in oil bath	
Gear ratio	5-speed claw shifted	
	1st	14:35
	2nd	15:24
	3rd	18:21
	4th	20:19
	5th	22:18
Ignition system	contactless DC- CDI ignition with digital advanced system type KOKUSAN	
Ignition timing	adjustment to max. 38° BTDC at 6000 rpm	
Generator	12V 200W	
Spark plug	NGK DPR8EA-9	
Spark plug gap	0.9 mm	
Cooling system	liquid cooled, permanent rotation of cooling liquid through mechanic driven water pump	
Cooling liquid	1 liter, 40% antifreeze, 60% water, at least -25° C (-13° F)	
Starting equipment	electric starter, kick starter	

## ASSEMBLY CLEARANCE, WEAR LIMIT

Crank shaft	axial play	.0.03 - 0.12 mm
	run out of crank stud	.max. 0.08 mm
Connecting rod bearing	radial play	.max. 0.05 mm
	axial play	.max. 1.10 mm
Cylinder 640	bore	.max. 101.04 mm
Piston forged	assembly clearance	.max. 0.12 mm
Piston cast	assembly clearance	.max. 0.05 mm
Piston rings end gap	compression rings	.max. 0.80 mm
	oil scraper ring	.max. 1.00 mm
Valves	seat sealing intake	.max. 1.50 mm
	seat sealing exhaust	.max. 2.00 mm
	run out of valve heads	.max. 0.05 mm
	valve guides diameter	.max. 7.05 mm
Oil pumps	clearance outer rotor - housing	.max. 0.20 mm
	clearance outer rotor - inner rotor	.max. 0.20 mm
Bypaß valve	minimum spring length	.25.00 mm
Clutch	Length of springs	.min. 34.5 mm (new 37.00 mm)
	wear limit organic	.min. 2.50 mm
Camshaft	diameter of bearing bolt (needle bearing)	.min. 19.97 mm
Transmission shafts	axial play	.0.10 - 0.40 mm

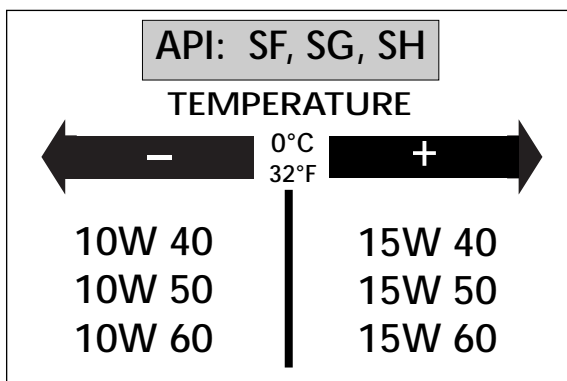
## TIGHTENING TORQUES - ENGINE

Hexagon nut at primary gear	M20x1.5	Loctite 242 + 170 Nm	(125 ft.lb)
Collar nut flywheel	M16x1.25 LH thread	80° C + 150 Nm	(132 ft.lb)
Hexagon nut for inner clutch hub	M18x1.5	Loctite 648 + 80 Nm	(60 ft.lb)
Kickstarter stop screw	M12x1.5	50 Nm	(35 ft.lb)
Allan head screws oil pump	M6	Loctite 242 + 8 Nm	(6 ft.lb)
Allan head screws freewheel hub	M6x12/M6x12.5	Loctite 648 + 18 Nm	(13 ft.lb)
Hexagon screw camshaft gear	M10	Loctite 242 + 35 Nm	(26 ft.lb)
Allan head screw cylinder head top sect.	M6x25/M6x65/M6x70 (8.8)	8 Nm	(6 ft.lb)
Allan head screw cylinder head top sect.	M6x50/M6x55 (12.9)	20 Nm	(15 ft.lb)
Cylinder head screws	M10	50 Nm	(37 ft.lb)
Collar nuts at cylinder base	M10	40 Nm	(30 ft.lb)
Hexagon screw chain sprocket	M10	Loctite 242 + 40 Nm	(30 ft.lb)
Oil drain plug	M22x1.5	30 Nm	(22 ft.lb)
Magnetic plug	M12x1.5	20 Nm	(15 ft.lb)
Plug bypass valve	M12x1.5	20 Nm	(15 ft.lb)
Hollow screws oil lines	M8x1	10 Nm	(7.4 ft.lb)
Hollow screws oil lines	M10x1	15 Nm	(11 ft.lb)
Jet screw clutch cover	M8	10 Nm	(7,4 ft.lb)
Screw plug timing-chain tensioner	M12x1.5	20 Nm	(15 ft.lb)
Counternuts valve adjusting screws	M7x0.75	20 Nm	(15 ft.lb)
Crankshaft locking bolt	M8	25 Nm	(19 ft.lb)
Engine mounting bolt	M8	40 Nm	(30 ft.lb)
Engine mounting bolt	M10	70 Nm	(50 ft.lb)

## BASIC CARBURETOR SETTING

	640 DUKE 40 kW
Carburetor	BST40-225
Carburetor setting number	100299
Main jet	145
Needle jet	689 X-6
Idling jet	45
Jet needle	6G5
Needle position from top	3 rd
Mixture.adju. screw open	2,25 turn

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### Engine oil

Use only oil brands (Shell Advance Ultra 4), which meet quality requirements of API-classes SF, SG or SH (informations on bottles) or higher. Both, mineral and synthetic oils with above specifications can be used.

**! CAUTION !**

POOR OIL QUALITY OR MINOR QUANTITY EFFECT EARLY ENGINE-WEAR.